

RCloud Tasking Form – Part B: Statement of Requirement (SoR)

Title of Requirement	PEv2 OpenCPI Support Project
Requisition No.	RQ0000023465
SoR Version	0.1

1.	Statement of Requirements
1.1	Summary and Background Information
	<p>Creation of an Open Component Portability Infrastructure (OpenCPI) Support Project (OSP) for the PEv2 System-on-Module (SoM) including associated upgrades to the accompanying OpenVPX carrier card and potential options for creation of MORA Data Message (MDM) OpenCPI workers.</p> <p>Redacted under FOIA Section 26 – Defence</p>
1.2	Requirement
	<p>The Authority requires the creation of an OpenCPI Support Project for the PEv2 System-on-Module, including associated upgrades to the accompanying OpenVPX carrier card.</p> <p>The Authority anticipates the requirement to take approximately 6 months. However, the contractor shall propose a contract length that it deems necessary to complete the work.</p> <p>The requirement is split into 2 main tasks:</p> <p>TASK 1: Creation of a OpenCPI Support Package for the PEv2 SoM</p> <p>The contractor shall create an OSP for the PEv2 SoM.</p> <p>This task has the following requirements:</p> <ol style="list-style-type: none">1. The OSP shall be created using OpenCPI version 2.4.x where x is the latest patch available at the start of the task.2. The OSP should be created using draft Land CEMA Architecture OpenCPI best practice guidance.<ol style="list-style-type: none">a. This guidance document will be made available to the contractor at contract commencementb. The contractor should provide feedback to the Authority on the usage and format of the guidance provided.c. The guidance document is intended for release as part of the LCA Technical Standard document set.

3. The OSP shall implement a suitable Platform Worker and associated infrastructure such that standard test applications (e.g. testbias) run without errors using both RCC and HDL workers.
4. The OSP shall contain Device Workers for the following PL peripherals:
 - a. 10GbE Ethernet
 - b. DRAM read/write
 - c. 1PPS and RefClock signals
5. Partial designs and specifications for the OSP and above Device Workers are available as implementation guidance.
 - a. Initial versions to guide proposal generation are provided as an OpenCPI project folder accompanying this SoR.
 - b. These designs and specifications may be updated between the issuance of the SoR and the start of the task. Updated versions to be used for implementation will be provided to the contractor at contract commencement.
6. The contractor shall provide a full block design of each Device Worker before implementation for Authority review and approval. It should contain details of (but not limited to):
 - a. Component / worker purpose and behaviour
 - b. Protocol definition for all ports
 - c. Worker properties (type and purpose)
 - d. Anticipated performance
7. The OSP shall be provided with suitable test applications to verify Device Worker functionality and performance.
 - a. Correct operation of these shall be demonstrated during the Final Review meeting.

TASK 2: Update of Carrier Card SoC to support 40 gigabit Ethernet (GbE)

The existing carrier card provides 2x 1GbE links to the OpenVPX backplane connectors and then routes these to the 1GbE Programmable System (PS) and the 10GbE PL interfaces on both of the PEv2 SOMs, by means of a soft Ethernet switch running on the Carrier Card System-on-Chip (SoC).

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This task has the following requirements:

1. The Carrier Card SoC firmware shall be updated to enable 40GbE functionality to the backplane Data Plane interface.
2. The 40GbE interface may be provided through the use of either:

	<ul style="list-style-type: none"> a. Use of existing third party (e.g. Xilinx) IP cores, either open-source or proprietary, including the purchase of appropriate licences if necessary. b. The creation of new IP cores under provided with a MIT licence - see below for detail. <p>3. The Carrier Card SoC shall route the interfaces as follows:</p> <ul style="list-style-type: none"> a. 1x 1GbE PS interface from each SoM to the P1 Control Plane 1GbE. b. 1x 1GbE PS interface from each SoM to the P1 Data Plane 1GbE. c. 10GbE PL interface from each SoM to P1 Data Plane 40GbE <p>4. The contractor shall provide a full block design of the proposed solution before implementation for Authority review and approval.</p> <p>5. The contractor should allow for the purchase of a suitable Ethernet NIC and/or Ethernet switch to enable testing of the 40GbE interface.</p> <ul style="list-style-type: none"> a. The existing breakout board is considered suitable for testing purposes. b. A single slot Payload Test Fixture may be available as GFE. c. An Ethernet switch may be available as GFE. d. Any items purchased shall be transferred to the Authority at task conclusion. <p>6. Appropriate testing shall take place to verify the transfer of packets to/from both SoMs on the carrier card across all interfaces to a suitable external system (e.g. PC)</p> <ul style="list-style-type: none"> a. This shall be demonstrated during the Final Review meeting. <p>The contractor should provide costed options for 2a and 2b above, for the Authority to decide which to enact.</p> <p>Potential for Open Source Publication</p> <p>In addition to Task 2 2b, the Authority may wish to publish some aspects of workers developed under this task as open source (under suitable open source licences).</p> <p>The elements that the Authority may wish to publish will be indicated within the Design Specifications accompanying this SoR. However, the final list will be mutually agreed once a final design has been approved.</p> <p>The contractor should indicate in their response that they will provide an MIT or similar open source licence, for the agreed elements.</p> <p>To support the Open Source Software (OSS) community, any bugs or issues with OpenCPI during the course of this task, shall be reported to the Authority, and preferably should also be reported to the maintainers via the OpenCPI gitlab page (gitlab.com/opencpi).</p>
1.3	Options or follow on work <i>(if none, write 'Not applicable')</i>
	Redacted under FOIA Section 26 – Commercial

1.4	Contract Management Activities
	Bronze contract management – Lead by project team
1.5	Health & Safety, Environmental, Social, Ethical, Regulatory or Legislative aspects of the requirement
	N/A

1.6	Deliverables & Intellectual Property Rights (IPR)					
Ref.	Title	Due by	Format	Expected classification (subject to change)	What information is required in the deliverable	IPR Condition
D1	Review Meetings - Kick Off and Final (optional Midpoint)	T0+2 weeks, midpoint, end of contract	Presentation	Redacted under FOIA Section 26 – Commercial	<p>A Kick-off meeting at the start of the contract and Final review meeting at end of the contract. Midpoint review meeting if contract longer than 6 months.</p> <p>Presentation pack to include but not limited to:</p> <ul style="list-style-type: none"> • Update on technical progress • Progress report against project schedule. • Review of risk management plan. • Commercial aspects. • Review of deliverables. • Risks/issues. • GFA and supplier performance <p>Key actions and decisions to be recorded by the contractor and communicated to Dstl.</p> <p>Meetings to be held at Contractor or Dstl premises as mutually agreed.</p> <p>The final review meeting should include a live demonstration of the key OSP functionality.</p>	Authority full user rights as per RCloud T&C's

D2	Progress Updates	At least monthly	Email or telecon as appropriate	Redacted under FOIA Section 26 – Commercial	<p>General progress update, to include but not limited to:</p> <ul style="list-style-type: none"> • Technical Progress • Progress against schedule • Commercial Aspects • Risks and Challenges <p>Key actions and decisions to be recorded by the contractor and communicated to Dstl.</p>	Authority full user rights as per RCloud T&C's
D3	Source code	End of contract	Software	Redacted under FOIA Section 26 – Commercial	All software/firmware source code developed for this task (including Vivado projects), as git repository or compressed archive. To include list of names and versions of dependencies/software required to build, and list/script of build commands required to build from source.	Authority full user rights as per RCloud T&C's
D3.1	Source code	End of contract	Software	Redacted under FOIA Section 26 – Commercial	Source code for 40GbE device worker (if Task 2 option 2b taken forward) and any other workers/components developed for Task 1 or 2 as mutually agreed. To include as per D3 above and block diagram / design description, and interface specifications	Authority full user rights as per RCloud T&C's + OSS licence

D4	SD Card Images	End of contract	Software	Redacted under FOIA Section 26 – Commercial	<p>Prebuilt SD card images for PEv2 SoM (including example / test apps) and Carrier Card SoC. To include list/script of commands required to build image from source.</p> <p>SD cards issued as part of GFA-3 to be updated with new images.</p>	Authority full user rights as per RCloud T&C's
D5	Test hardware	End of contract	Hardware	Redacted under FOIA Section 26 – Commercial	Any Commercial-off-the-shelf (COTS) hardware (such as NICs or Ethernet switches) purchased under this task.	n/a
D6	Summary Report	End of contract	Document	Redacted under FOIA Section 26 – Commercial	A working paper describing the general work carried out under the contract, focussing on any issues/challenges/difficulties/limitations identified, any suggested or implemented resolutions and recommendations to avoid them in the future.	Authority full user rights as per RCloud T&C's

1.7	Deliverable Acceptance Criteria
	As per standard terms

2	Evaluation Criteria
2.1	Method Explanation
	As the requirement is being offered on a non-competitive bases, the proposal shall be subjected to an informal review, and where required feedback shall be issued to the supplier.
2.2	Technical Evaluation Criteria
	<p>Provision of a detailed Technical Proposal that fully meets the Statement of Requirements which should include, as a minimum and where appropriate:</p> <ul style="list-style-type: none"> • Breakdown of Deliverables and any Interim Payments (Milestone/stage) due dates; • A work breakdown structure/project plan with key dates and Deliverables identified including required delivery dates for Government Furnished Assets; • A clear identification of Dependencies, Assumptions, Risks and Exclusions which underpin your Technical Proposal.
2.3	Commercial Evaluation Criteria
	<p>The commercial evaluation shall consists of the following Pass / Fail questions:</p> <ol style="list-style-type: none"> 1. Has the proposal been submitted a firm price, using the accepted RCloud rate card for non-competitive tasks? 2. The proposal is fully compliant, and accepts, the RCloud v4 terms in full 3. The proposal has included a Supplier Assurance Questionnaire (SAQ) in response to the specified Cyber Risk Assessment detailed in RCloud Document Part A, and the response has included the DCPD correspondence. 4. The supplier has submitted One (1) Full Technical proposal excluding all commercial and price details, and has submitted One (1) Full Commercial and Technical proposal including all price data. 5. The Supplier has acknowledged and shows content with the additional terms outlined in Part A as part of their proposal.